federal register

Friday
April 17, 1992

Part VI

Department of Education

National Institute on Disability and Rehabilitation Research; Final Funding Priorities; Notice

DEPARTMENT OF EDUCATION

National Institute on Disability and Rehabilitation Research; Final Funding Priorities

AGENCY: Department of Education.

ACTION: Notice of final funding priorities for the National Institute on Disability and Rehabilitation Research for Fiscal Years 1992–93.

SUMMARY: The Secretary announces final funding priorities for several programs under the National Institute on Disability and Rehabilitation Research (NIDRR) for Fiscal Years 1992–93. NIDRR intends to propose additional priorities for Fiscal Year 1993 at a later date.

EFFECTIVE DATE: These priorities take effect either 45 days after publication in the **Federal Register** or later if the Congress takes certain adjournments. If you want to know the effective date of these priorities, call or write the Department of Education contact person.

FOR FURTHER INFORMATION CONTACT: Betty Jo Berland, National Institute on Disability and Rehabilitation Research (Telephone: (202) 732–1139). Deaf and hearing-impaired individuals may call (202) 732–5316 for TDD services.

SUPPLEMENTARY INFORMATION:

Authority for the research programs of NIDRR is contained in section 204 of the Rehabilitation Act of 1973, as amended. Under these programs, awards are made to public and private nonprofit and for-profit agencies and organizations, including institutions of higher education, Indian tribes, and tribal organizations. NIDRR may make awards for up to 60 months, through grants or cooperative agreements. The purpose of the awards is for planning and conducting research, demonstrations, and related activities that lead to the development of methods, procedures, and devices that will benefit individuals with disabilities, especially those with the most severe disabilities. These authorized activities, as well as the proposed priorities, support AMERICA 2000, the President's strategy for moving the Nation toward the National Education Goals, by encouraging agencies and organizations to help turn their communities and schools into places where learning can happen for all students. These authorized activities and funding priorities will help move the country toward achievement of the National Education Goals by especially helping to address: Readiness for School (Goal 1); Student Achievement and Citizenship (Goal 3); and Adult Literacy and Lifelong Learning (Goal 5).

NIDRR regulations authorize the Secretary to establish research priorities by reserving funds to support particular research activities (see 34 CFR 351.32, 352.32, 353.32, and 355.32). These priorities were proposed for public comment through publication in the **Federal Register** on November 18, 1991 at 56 FR 58280. NIDRR reviewed the comments received on the priorities and now announces final priorities based on the responses to the proposed priorities, available funds, and other Departmental considerations. A synopsis of the comments received and the Secretary's responses to the comments are included in the Appendix to this document. NIDRR has made some modifications to the priorities based on suggestions contained in the comments, but these are not major changes in the priorities. The publication of these final priorities does not bind the Department of Education to fund projects under any or all of these priorities, except as otherwise provided by statute. Funding of particular projects depends on the availability of funds and the quality of the applications received.

The following final funding priorities represent areas in which NIDRR plans to support research and related activities through grants or cooperative agreements in four programs:

Research and Demonstration projects (R & D)
Rehabilitation Research and Training Centers (RRTCs)
Knowledge Dissemination and Utilization projects (D & U)
Rehabilitation Engineering Centers (RECs)

Research and Demonstration Projects

Research and Demonstration projects support research or demonstrations or both, in single project areas on problems encountered by individuals with disabilities in their daily activities. These projects may conduct research on rehabilitation techniques and services, including analysis of medical, industrial, vocational, social, emotional, recreational, economic, and other factors affecting the rehabilitation of individuals with disabilities.

Final Priorities for Research and Demonstration Projects Parenting with a Disability

The President and the nation's Governors set forth a number of education goals for AMERICA 2000, one of which was that every child be ready for entry into school. In support of this goal, NIDRR is proposing research aimed at enhancing the capacities of parents who have disabilities to prepare their children from birth through age five, whether or not the children have disabilities, for school.

As society progresses to complete inclusion and integration for individuals with disabilities, more persons with disabilities are becoming parents. (Kirshbaum, M. "Parents with Physical Disabilities and Their Babies," Zero to Three, Vol. VIII, No. 5, 1988). However, parents with various types of disabilities, including learning disabilities, sensory impairments, physical disabilities, and cognitive disabilities, may need to develop or maintain skills and social structures that support their parenting efforts. Research involving parents with disabilities has focused primarily on the effects of a parent's disability on a child's development (Thurman, S.D.(ed.) Children of Handicapped Parents: Research and Clinical Perspectives, 1985). Parents with disabilities are not unique, but they do experience some additional challenges that are different from those confronted by parents without disabilities. For the purposes of this project, a distinction must be made between those issues that are common to all parents and those that are unique to parents who have disabilities. Lack of information regarding the needs of parents with disabilities can hinder the public and private sectors and individual parents with disabilities in planning optimum parenting activities to prepare their children for entry into school.

Parents with disabilities must deal with the inexperience, lack of training, and frequent skepticism of educators and health and child care professionals; must overcome self-doubts; and must adapt conventional parenting knowledge and resources to meet their individual circumstances. Because of the stimulation that infants and toddlers receive during daily child care routines, enhancing the child care skills of parents with disabilities will contribute to the physical, intellectual and social development of their children. Parents with disabilities may need help with organizational or communication skills, as well as with learning techniques or new assistance technologies, to help their children to be ready for school. These parents also may need new skills to allow them to serve as advocates for their children and to assist school personnel to deal appropriately and supportively with them in their roles as parents.

Any project to be funded in response to this priority must involve parents with disabilities, as appropriate, and

other family members in all phases of the planning, implementation, and evaluation of the project and dissemination of results. Any project to be funded in response to this priority must consider the needs of parents with severe physical and sensory disabilities, and may include parents with other disabilities if appropriate to the research.

An absolute priority is announced for a project to:

• Estimate the number of parents with disabilities who have children aged birth through five years both with and without disabilities and project the growth rate of this population;

• Assess the unmet needs of parents with disabilities in their efforts to prepare their preschool children with readiness experiences for their entry into the educational system;

• Identify effective practices and model programs (including practices that could be adapted to parents with disabilities), as well as effective practices in providing technology and other support and skills enhancement for parents with disabilities to enhance the readiness of their preschool children for school; and

• Disseminate information and materials regarding effective practices for preparing children for school to parents with disabilities, health and child care professionals (e.g., pediatricians, social workers) and other interested groups or individuals.

Braille Literacy

A second education goal of the President is to reduce and eventually eliminate illiteracy in the nation. One group of persons that could be considered illiterate for many purposes are those blind individuals who have not learned to read and write in Braille. The combination of mainstreaming and technological development has resulted in fewer blind children learning to read and write in Braille. According to the Council of Executives of American Residential Schools for the Visually Handicapped, there is a national concern that students who are visually impaired are not becoming proficient in the basic skills of reading, writing, and computing. In 1965 nearly half—48 percent—of all blind and visually impaired students read Braille. By 1989, this had dropped to 12 percent, according to the American Printing House for the Blind. The number of blind adults without the ability to read a sentence that they have written themselves is increasing. Blind professionals are struggling as adults to learn Braille for note-taking. Newly blind older persons are often convinced that learning Braille is too arduous and lengthy a process. The significance and prevalence of these problems differs for those who become adventitiously blinded and those who are congenitally blind, and this difference must be considered in the research and model development.

While new auditory and computer technologies have enabled blind persons to communicate without Braille, there are many applications for which Braille is the preferred medium. These include note-taking and reading in meetings, lectures, and public settings in which auditory media are not acceptable. Braille is commonly used in signage, safety and alarm systems, and other public guidance systems, as well as much published material. Braille is likely to remain an important communications medium for persons who are blind. The issue was discussed extensively by Dr. Michael J. Bina in an article in the Journal of Visual Impairment and Blindness (JVIB) (January, 1991) as one of the "Current Concerns and Issues." A paper on the topic, "Literacy: Issues for Consumers and Providers" was presented by Susan Spungin at the 1989 National Convention of the National Federation of the Blind. "Issues Related to Literacy of the Legally Blind Learner" (E. Rex) appeared in V. 83 of the JVIB in 1989.

Any project to be funded in response to this priority must involve individuals who are blind, including those who are literate in Braille and those who are likely candidates for learning Braille, in all phases of the planning, implementation, and evaluation of the project and dissemination of project results.

An absolute priority is announced for a project to:

• Develop an articulated Braille literacy program for adults who are blind that reflects the findings of current research on the tactile nervous system and uses instructional materials of the highest quality and effectiveness;

• Develop new educational models that enable blind adults to become literate in Braille in optimum time required by the individual;

• Provide in service, pre-service, and self-study education programs for teachers and administrators in adult educational institutions and rehabilitation facilities in order to ensure the effective implementation of the new educational models;

• Assess the usefulness of various prototype technological devices that interface with computer screens to produce Braille output as techniques to enhance literacy in Braille; and

• Disseminate new program models and technologies to appropriate target populations.

Rehabilitation of Visually Impaired Older Persons

In 1980 the National Society to Prevent Blindness estimated that there were approximately 11.4 million people with some level of vision impairment in the United States. Of these, approximately 500,000 were legally blind (best corrected central visual acuity equal to or less than 20/200 in the better eye, or a field of vision no greater than 20 degrees in its widest diameter). Figures from the Model Reporting Area for Blindness Statistics indicate that approximately 67 percent of the legally blind persons in the United States are over the age of 50 years, 52 percent over 60, 37 percent over 70, and 20 percent over 80.

Data from the National Health Interview Survey, 1983–1985, indicate that nearly one-third of those surveyed believed their inability to see well prevented them form performing activities such as household chores and engaging in recreation. Approximately 40 percent reported problems with mobility, while 35 percent had difficulty reading the newspaper. Visually impaired older persons—those aged 55 or more—are more dependent on home help than the elderly population in general. Poor sight is a key factor contributing to institutionalization. Eleven percent of visually impaired older persons here living in institutions.

Any project to be funded in response to this priority must involve persons who are blind or visually impaired, including elderly individuals who are visually impaired, in the conduct and evaluation of the project and in the dissemination of its results. Because of the potential impact of this research on clients of the State-Federal vocational rehabilitation (VR) system, any project to be funded in response to this priority must inform and coordinate with the relevant VR agencies.

An absolute priority is announced for a project to:

• Identify and evaluate interdisciplinary models for the rehabilitation of older visually impaired persons that will provide for early identification and intervention strategies; approaches to the use of optical or electronic aids to maximize residual vision and prevent visual handicaps; training of visually impaired older persons and their families for independent living and independent mobility; and vocational support

strategies to maintain or regain remunerative employment;

• Develop and test programs to train service providers from various disciplines on the nature of low vision disorders and the use of remaining visual abilities, appropriate intervention techniques, follow-up procedures, and other strategies to maximize independence for this group;

• Identify effective practices in the Older Blind Independent Living Program; and

• Disseminate model program materials in accessible formats to generic service providers, rehabilitation service providers, elderly and visually impaired persons and their families, and other researchers.

Supported Employment for Persons with Severe Physical Disabilities

Supported employment for people with severe disabilities has expanded markedly since its beginnings in 1984. The initiative began with grassroots concern over the lack of integrated employment opportunities for people with severe and profound mental retardation. Recently, supported employment programs have been expanded to include people with other disabilities. All people who require long-term support to maintain success in employment, including, for example, persons with long-term mental illness, traumatic brain injuries, or severe physical disabilities are potential candidates for supported employment. While people with severe disabilities other than developmental disabilities are potential candidates for supported employment, the vast majority of people with access to supported employment are those identified as mentally retarded. As might be expected, the support strategies most in use are those designed for people with mental retardation. However, as part of an ongoing effort to extend supported employment to persons with other types of disabilities; NIDRR has supported R&D projects on supported employment for individuals with traumatic brain injury and for those with long-term mental illness. To continue that process, NIDRR now proposes research and demonstration activities that would adapt supported employment models to meet the needs of persons with severe physical disabilities. There are a number of recurring issues that should be considered in supporting people with severe physical disabilities in community employment.

Any project to be funded in response to this priority must involve individuals with severe physical disabilities, including those who are participants in, or potential candidates for, supported employment, in all phases of the planning, implementation, and evaluation of the project and in the dissemination of project results. Because of the potential impact of this research on clients of the state-federal vocational rehabilitation (VR) system, any project to be funded in response to this priority must inform and coordinate with the relevant VR agencies.

An absolute priority is announced for a project to:

• Review the current state-of-the-art in providing supported employment services to individuals with severe physical disabilities, and identify those agencies that are providing funding for long-term ongoing support services;

• Examine the organizational configuration, staff training and characteristics, caseload size and mix, service mix, and funding strategies most suited for providing supported employment services to this population;

• Identify effective program features, including types of employment and long-term supports, as well as expected client outcomes;

• Demonstrate innovative models to coordinate supported employment services for individuals with severe physical disabilities with other local service providers, including making effective use of provisions of the Social Security Disability Amendments of 1980, which removed certain disincentives to work;

• Develop models to demonstrate hands-on approaches that staff, such as job coaches, may use in providing supported employment services—such as transportation, job engineering and assistive technology services—for individuals with severe physical disabilities;

• Develop materials, based on research findings, and provide technical assistance to enhance the capacity of a national cross-section of vocational agencies to facilitate the provision of supported employment services to individuals with severe physical disabilities;

• Disseminate research findings to vocational and independent living rehabilitation service delivery personnel, researchers, rehabilitation educators, and persons with disabilities; and

• Coordinate, as appropriate, with projects funded under the Rehabilitation Services Administration's (RSA) Special Projects and Demonstrations for Providing Supported Employment Services.

Improving the Functional Utility of Robotics Through Enhanced Sensory Feedback

Researchers in the field of robotics have long been aware of the potential for a robotic arm to provide upper extremity function for a paralyzed person. While the field of robotics is relatively new, the principles of those devices have been applied successfully in externally-powered prostheses for arm amputees and with some success in externally-powered orthoses around the arms of paralyzed individuals. In the last two decades a number of projects, some with substantial resources, have sought to develop a commercially feasible robotic arm device. Many paralyzed persons have been involved in the research and demonstration phases of these projects, mostly in the laboratory or clinical environments. However, there is no reasonably priced robotic device available for use by high-level quadriplegic persons in their homes.

One explanation for this is that, while the mechanical design and computer controlled systems associated with robotics have been highly developed, there remains a major deficiency in the communication link between man and machine. It is interesting to note that the most successful robotic arms (powered orthoses) were developed more than twenty years ago for use by persons whose arms were paralyzed as a result of poliomyelitis. The control systems of these arms were primitive by present day standards, yet many paralyzed persons used them for years in their homes. The important point is that these persons retained sensation and resulting proprioceptive feedback that allowed them to know where their arms were without relying on their eyes. Proprioceptive feedback plays an important role in arm prostheses as well. Most bilateral amputees prefer cable-operated terminal devices over modern myoelectric hands because, through their shoulder position and the force that controls the cables, they are aware of the amount of opening and pressure of the terminal device. To be fully functional, robotic systems must provide something like the same level of proprioceptive feedback to the user in a format that requires only as much attention as that employed by a person without paralysis.

Researchers have been aware of this problem for years, but have not developed an acceptable device or strategy to deal with the sensory feedback problem. An acceptable feedback mechanism would be a major

step in making robotic manipulators more useful to persons with disabilities. NIDRR plans to fund a project to design, develop, and test a robotic control system that includes an acceptable feedback mechanism.

A project funded under this priority must include an extensive review of the literature that demonstrates the project's thorough familiarity with relevant research throughout the world, and the project must present one or more technical concepts on which design and development will be based. The project must demonstrate that the proposed concept is scientifically defensible and that the proposed product has the potential to be produced commercially as an adjunct to a presently available robot.

The project also must detail expected progress for each year of the project and must include performance specifications that will be met by the completed system. These specifications should be based on the accuracy, force, and speed with which an ablebodied person is able to position his index finger in the total three dimensional space available to one of his or her arms without visual feedback. The measures of such performance and the degree to which the developed system, operated by a paralyzed subject, will approach these measures, should be presented in the application.

An absolute priority is announced for a project to:

- Develop a prototype control system that enables a person with upper-extremity paralysis to position a state-of-the-art manipulator in three dimensional space with an accuracy and speed of response that approaches that of a normally functioning human being;
- Test the developed system on a sample of individuals with upper-extremity paralysis; and
- Disseminate results through presentations at scientific meetings and other appropriate means.

Demonstration of Comprehensive Rehabilitation Services Programs for Individuals With Traumatic Brain Injury (TBI)

Approximately 250,000 U.S. citizens suffer trauma-induced brain injuries each year. About 50,000 of these are left with physical, intellectual, behavioral, and social adjustment impairments severe enough to prevent them from returning to their former levels of functioning and responsibility. Both the number of persons with traumatic brain injury (TBI) and the severity of their injuries are increasing. The problem is further compounded by the fact that many persons with brain injuries are young and, with increased life expectancy, require comprehensive rehabilitation to maximize the quality of their lives. Preliminary research indicates that early comprehensive and coordinated acute rehabilitation care is likely to improve the outcomes for this group. NIDRR proposes to demonstrate a comprehensive multidisciplinary model system of rehabilitative services for individuals with TBI and to evaluate its efficacy through the collection and analysis of uniform data on system benefits, costs, and outcomes.

The model system demonstration and the collection of uniform and standardized data must be conducted within the context of a comprehensive program of services that coordinates all aspects of care and rehabilitation. The model system must include emergency medical services; intensive and acute medical and surgical care; comprehensive rehabilitation management; psychosocial adjustment services; educational and vocational preparation; and community reintegration with extended follow-along services and day programs that promote independence and vocational success. Because of the potential impact of this research on clients of the state-federal vocational rehabilitation (VR) system, any project to be funded in response to this priority must inform and coordinate with the relevant VR agencies.

An absolute priority is announced for one or more projects to:

- Demonstrate and evaluate the costs and benefits of a comprehensive service delivery system for individuals with traumatic brain injury;
- Develop and assess new methods and intervention techniques to improve the rehabilitation of individuals with TBI;
- Participate in clinical and systems analysis studies of the traumatic brain injury model system by contributing to a uniform, standardized national data base as prescribed by the Secretary;
- Disseminate findings to clinicians, researchers, rehabilitation educators and service providers, and individuals with TBI and their families;
- Demonstrate models that involve rehabilitation educators and service providers and individuals with TBI and their families in the design, implementation, and evaluation of the studies of TBI conducted under this priority; and
- Coordinate, as appropriate, with activities being undertaken by the regional head injury centers funded under RSA's Special Demonstrations Program and with the Head Injury Task Force established by the Secretary of Health and Human Services.

Vocational Education for Persons With Traumatic Brain Injury

The Interagency Head Injury Task Force (Health and Human Services, 1989) reported that someone receives a head injury every fifteen seconds in the United States. The report cites traumatic brain injuries as the leading killer and cause of disability among children and young adults. Among those who survive, traumatic brain injury (TBI) is further identified as the principal cause of permanent brain damage in young adults.

Individuals with traumatic brain injury frequently need additional services to assist them to enter and maintain adult roles, including employment, independent living, or post-secondary education. Persons with traumatic brain injuries, including those with mild losses, need vocational education programs designed to meet their unique cognitive, emotional, and behavioral deficits and capacities. Effective model vocational education programs are, therefore, essential to improving the quality of services to this disability population.

Any project to be funded in response to this priority must involve individuals with traumatic brain injury or their families in all phases of the conduct of the project and in the dissemination of project findings. Because of the potential impact of this research on clients of the State-Federal vocational rehabilitation (VR) system, any project to be funded in response to this priority must inform and coordinate with the relevant VR agencies.

An absolute priority is announced for a project to:

- Investigate the special problems and needs of persons with traumatic brain injuries, including ability to interact with others, stimulus distractions versus attention to task, affective and cognitive deficits, and other consequences of TBI as they affect vocational education programming;
- Identify existing, or develop and test new, models of secondary vocational education, considering state-of-the-art research in this area and including instructional materials specific to the unique needs of persons with traumatic brain injury;
- Develop and test techniques for training vocational instructors to work with students with TBI;
- Develop vocational education programming to enhance coordination and cooperation between secondary and postsecondary educational institutions

and vocational rehabilitation agencies and other service systems to facilitate transition into employment;

• Identify strategies to maximize the inclusion and integration of persons with traumatic brain injury in the mainstream of vocational education activities; and

• Disseminate research findings to vocational education teachers, independent living service delivery personnel, rehabilitation agencies, special education personnel, researchers, rehabilitation educators, and persons with disabilities.

Vocational Education Models for Students With Sensory Disabilities

Students with sensory disabilities may not achieve satisfactory vocational education outcomes for a number of reasons. One problem derives from the fact that vocational education occupational skill courses on the secondary and postsecondary levels generally draw their instructors from the trades, labor, or industry. While this has major advantages for students without disabilities, it is problematic for those with vision and hearing disabilities. The instructors do not have special preparation to teach students with disabilities, equipment and teaching materials are often not accessible, and many vocational programs continue to direct students with sensory impairments into restrictive and stereotypical occupations, disregarding options available to their nondisabled peers. The instructors' links to local business are frequently the routes to postschool employment for students, and the students with disabilities are less likely to make the transition from vocational education to competitive employment.

To meet the needs of students with sensory disabilities, vocational education programs should include specialized training for instructional personnel, accessible equipment, texts, and examinations, and linkages with other community-based services. Any project to be funded in response to this priority must involve individuals with sensory disabilities in the conduct and evaluation of the project and in the dissemination of its results. Because of the potential impact of this research on clients of the State-Federal vocational rehabilitation (VR) system, any project to be funded in response to this priority must inform and coordinate with the relevant VR agencies.

An absolute priority is announced for a project to:

• Develop and evaluate non-stereotypical vocational education programs for students with sensory disabilities, including those who are visually impaired or blind and hearing-impaired or deaf, that will increase the rate of graduation for these students;

• Identify and test strategies that would maximize the integration of persons with sensory disabilities into mainstream vocational education;

• Develop and test instructional models to prepare vocational teachers, especially those from industry, to teach students with sensory disabilities;

• Evaluate the accessibility of current equipment and materials and develop strategies to enhance accessibility; develop, evaluate, and disseminate accessible instructional materials and test schemes for training teachers in the use of these materials;

• Develop model programs to link vocational education with rehabilitation, independent living, and other adult services needed by students with sensory disabilities;

• Develop strategies to increase the rate of transition from vocational education into competitive employment for these students; and

• Disseminate materials, in accessible formats, to school systems, regular education and special education teachers, and educators, and students with sensory disabilities and their parents, making use of any appropriate clearinghouses and technical assistance projects that currently exist.

Preparing Young Persons with Deafness To Make Optimal Use of Interpreter Services

There has been a serious effort over the past two decades to increase the numbers of interpreters for the deaf. In its report to Congress, the Commission on Education of the Deaf (COED) established under Public Law 99–371, The Education of the Deaf Act of 1986, recognized the growing role that interpreters play in both the education and rehabilitation of persons with deafness. The COED recommendations address the need for increased efforts in training and coordinating interpreter services both in the schools and in the community. However, the training of interpreters alone, without a parallel effort to train children who are deaf to fully utilize these services, will not result in maximum long-term benefit.

While educators have long accepted that children with normal hearing can be trained to listen more effectively, no information exists as to whether, or how, a similar principle applies to teaching deaf children to receive information effectively through a sign language interpreter. It is too frequently taken for granted that deaf children have inherent skills in effectively using interpreters and accurately understanding signed information.

There is little research into how deaf children can be trained to make more efficient use of interpreters in school and in their general lives and how interpreters can be trained to convey information appropriate for the child's age and subject matter needs. It is important to learn what schools are doing to prepare children who are deaf to work with interpreters and to train interpreters and classroom teachers to provide appropriate services.

In addition, there is a lack of objective data about what older deaf children of differing etiologies in different educational settings prefer in the interpreting process or about how to enhance the consumer's level of comprehension and retention. Similarly, there is little information on the relationship between early acquisition of sign language skills and effective use of interpreters. This knowledge could have significant implications for the manner in which interpreters are trained or retrained. Although the Federal government is spending $2.5 million in 1991 on training interpreters, of which $1 million is targeted toward educational interpreters, there are no data available as to what type of training might benefit the users of these services.

Any project to be funded in response to this priority must involve individuals who are deaf, individuals who provide sign language interpretation, teachers of deaf children, and trainers of sign language interpreters in all phases of the planning, implementation, and evaluation of the project and in the dissemination of the project results.

An absolute priority is announced for a project to:

• Survey current practices in preparing deaf children of varying ages and etiologies, in different educational settings, to use interpreters in various environments more effectively;

• Investigate the attitudes of deaf children, of varying ages and etiologies and in different educational settings, about their capacities to assimilate information through interpreters and interpreter services, in order to provide an information base for the development of more effective models of interpreter services;

• Determine ways that the interpreting process can be improved to enhance reception, comprehension, and retention of information that is conveyed manually by interpreters, and investigate the uses of technology—such as computer-assisted notetakers or transcribers—to enhance the value of interpreters in the classroom;

• Develop conceptual models, borrowing from those used in cross-cultural interpreting, to enhance the interpreter's ability to improve the dynamics of communication between deaf children and others;

• Translate the research into appropriate recommendations, guidelines, methodologies, curricula, and supporting materials for enhancing the ability of children who are deaf to obtain maximum benefits from the interpreting process;

• Conduct studies to advance current knowledge of how well children who are deaf internalize, process, and retain information obtained through current interpreting methods; and

• Disseminate findings in accessible formats to interpreters and trainers of interpreters, educators, and others who provide services to deaf children, and to deaf children and their parents.

Case Management of Secondary Complications and Disabilities Resulting from Diabetes

Approximately seven million people in the United States have been diagnosed with diabetes, including those with juvenile diabetes, and an additional five million may have the disease unknowingly. Each year more than 650,000 new cases of diabetes are identified, and in 1985, diabetes was the sixth leading underlying cause of death due to disease. In terms of human suffering, individuals with diabetes face not only a shortened life span but also the probability of incurring acute and chronic secondary complications and disabilities. Nearly all persons with diabetes develop at least some complications of the disease. For example, cardiovascular disease is the leading cause of mortality among people with diabetes, accounting for over half of all deaths. Preventing cardiovascular disease could have a major effect on morbidity and mortality from diabetes mellitus.

Approximately 50,000 per year, or half of all nontraumatic amputations in the United States, occur in people with diabetes. Half of all lower extremity amputations can be prevented through proper foot care or reducing risk factors such as hyperglycemia, cigarette smoking, and high blood pressure in persons with diabetes. In addition, peripheral nerve dysfunction has been estimated to occur in over 50 percent of diabetic patients. The likelihood of developing a diabetic neuropathy correlates with duration and severity of disease. A major secondary complication, diabetic retinopathy, the most common eye complication of diabetes, also is related to the duration and type of diabetes. An estimated 40 percent of those having Type I diabetes for less than 10 years, and 95 percent of those with the disease for more than 15 years, develop retinopathy. For those with Type II diabetes, the corresponding incidences are 25 percent and 50 percent, respectively. Diabetic retinopathy is the leading cause of new cases of blindness among people ages 20 through 44. Among people ages 45 through 74, it is the second leading cause of blindness. In 1987, diabetes accounted for approximately 10,000 new cases of end-stage renal disease (ESRD), or progressive chronic kidney failure, in the United States. In that year, 30 percent of new chronic kidney failure cases were the result of diabetes.

Service providers and researchers have identified case management as a significant mechanism for providing outcome oriented, individualized, continuous assistance to persons (including persons with disabilities) whose complex needs often require the coordinated services of several agencies over a period of time. Providing comprehensive, coordinated services to an individual with disabilities who is participating in the rehabilitation process requires skill in diagnostic and evaluation areas that are based in part on knowledge of the present medical issues and those to be anticipated. Due to the variety of problems encountered and the need for a comprehensive coordinated approach that includes prevention of secondary complications, early diagnosis and evaluation (treatment and rehabilitation), the case manager must interact effectively with all participants including the consumer, family members, physicians, other members of the treatment team, social services personnel, employers, and persons from offices providing community resources.

Some of the questions to be addressed by a case management model focusing on secondary complications and disabilities resulting from diabetes include the following:

(1) What are the possible and probable secondary complications to be managed?

(2) What comprehensive medical and non-medical resources should be accessed?

(3) What are the funding issues, particularly as related to health insurance coverage?

(4) What is an appropriate program to help control the development of complications?

(5) What are the functional limitations resulting from specific secondary complications?

(6) What impact do these functional limitations have on educational and vocational potential?

(7) What allied professions and support systems appear to be necessary for the care and management of an individual with secondary complications of diabetes?

(8) Are different guidance and counseling techniques necessary because complications are secondary to the disease process?

(9) What are the psychosocial issues or problems that will affect goal-setting?

(10) What are the employer's concerns?

(11) How can consumers and families be their own best advocates?

Any project to be funded in response to this priority must involve individuals who have diabetes, including those who have experienced secondary complications and work limitations, and rehabilitation counselors and others who provide services to this population, in the planning, implementation, and evaluation of the project and in the dissemination of project results. Because of the potential impact of this research on clients of the State-Federal vocational rehabilitation (VR) system, any project to be funded in response to this priority must inform and coordinate with the relevant VR agencies.

An absolute priority is announced for a project to:

• Identify current case management practices that can most effectively integrate the myriad of services required to prevent and treat secondary complications for persons with Type I and II diabetes mellitus;

• Develop and demonstrate the effectiveness of a case management model that provides a comprehensive coordinated service delivery system specifically related to the problem of secondary complications of diabetes, including prevention, treatment, the use of assistive technologies, and follow-up;

• Develop, test and evaluate an effective education and training program for case managers and vocational rehabilitation personnel for the purpose of upgrading their knowledge and skills to provide coordinated prevention and treatment services to mitigate the effects of secondary complications for persons with Type I and Type II diabetes mellitus;

• Through consultation with appropriate health agencies, either local, State, or national, determine current gaps in information and establish priorities among research needs; and

• Prepare and disseminate materials such as monographs, presentations, professional training materials, and scientific journal articles, on aspects of case management relating to rehabilitation of disabilities resulting

from secondary complications of diabetes, in order to disseminate project findings to VR and other relevant audiences, including consumers, families, advocacy groups, and service providers in various agencies.

Rehabilitation Research and Training Centers

Authority for the Rehabilitation Research and Training Centers (RRTCs) program of NIDRR is contained in section 204(b)(1) of the Rehabilitation Act of 1973, as amended. Under the RRTC program, awards are made to institutions of higher education, or to public and private organizations, including Indian tribes and tribal organizations, that collaborate with institutions of higher education.

RRTCs conduct programmatic, multidisciplinary, and synergistic research, training, and information dissemination in designated areas of high priority. NIDRR's regulations authorize the Secretary to establish research priorities by reserving funds to support particular research activities (see 34 CFR 352.32). A program of RRTCs has been established to conduct coordinated and advanced programs of rehabilitation research and to provide training to rehabilitation personnel engaged in research or the provision of services. Each Center conducts a synergistic program of research, evaluation, and training activities focused on a particular rehabilitation problem area. Each Center is encouraged to develop practical applications for all of its research findings. Centers generally disseminate and encourage the utilization of new rehabilitation knowledge through such means as writing and publishing undergraduate and graduate texts and curricula and publishing findings in professional journals. All materials that the Centers develop for dissemination training must be accessible to individuals with a range of disabling conditions. RRTCs also conduct programs of in-service training for rehabilitation practitioners, education at the pre-doctoral and post-doctoral levels, and continuing education. Each RRTC must conduct an interdisciplinary program of training in rehabilitation research, including training in research methodology and applied research experience, that will contribute to the number of qualified researchers working in the area of rehabilitation research. Centers must also conduct state-of-the-art studies in relevant aspects of their priority areas. Each RRTC must also provide training to individuals with disabilities and their families in managing and coping with disabilities.

Each RRTC is encouraged to develop an effective partnership with a Historically Black College or University (HBCU) that is interested in conducting research in a related area. The partnership may include joint projects, fellowships for HBCU students or faculty to obtain intensive research training and experience at the RRTC, student or faculty exchanges, or other arrangements suggested by the applicant. The purpose of the partnerships is to develop the interest and capacity of the HBCUs to conduct independent research and training in areas related to disability and rehabilitation.

NIDRR will conduct, not later than three years after the establishment of any RRTC, one or more reviews of the activities and achievements of the Center. Continued funding depends at all times on satisfactory performance and accomplishment, in accordance with the provisions of 34 CFR 75.253(a).

Rural Rehabilitation Service Delivery

Early rural development efforts were initiated to alleviate agricultural infrastructure limitations or to improve farm family living conditions. Because rural America is a diverse and changing place today, rural development efforts must reach a far more varied segment of rural America, and require better coordination. For example, while agricultural workers accounted for a substantial portion of the rural population in the past, recent estimates indicate that only five million people, or less than 2.4 percent of the population, are directly involved in agricultural productivity today.

Both employment and independent living for rural residents with disabilities can be adversely affected by the inaccessibility of health, education, and social services, inaccessible public and private facilities, extremely limited job opportunities, and limited resources for social services. Current advocacy models, service delivery methods, and concepts of independence generally were developed in urban settings and are most applicable to urban living conditions. The problems of persons with disabilities in rural areas are further complicated by limited rural education and employment opportunities (Omohundro, Schneider, Marr, and Grannemann, 1983). A high proportion of the jobs in rural settings involves manual labor. A history of limited access to education and limited demand for an educated labor force has resulted in generally lower educational levels in rural areas.

There is a great demand by individuals with disabilities and service providers for information sharing and dissemination in rural areas due to geographic distances and barriers to personal access. Any center to be funded in response to this priority must involve rural residents who have disabilities, or their parents where appropriate, in all phases of the planning, implementation, and evaluation of the center and in the dissemination of center findings and products. Because of the potential impact of this research on clients of the State-Federal vocational rehabilitation (VR) system, any project to be funded in response to this priority must inform and coordinate with the relevant VR agencies.

An absolute priority is announced for a center to:

- Identify the employment and vocational rehabilitation service needs of persons with disabilities living in rural communities, and develop, field test, and evaluate appropriate interventions to expand and improve training, employment opportunities, and job placement in occupations appropriate to rural areas;
- Demonstrate and assess the applicability of supported employment program models for residents of rural areas who have disabilities;
- Identify issues in independent living in rural communities and develop model interventions to improve transportation, health care, housing, and access to facilities and services;
- As appropriate, coordinate with RSA's Independent Living Centers serving primarily rural areas;
- Provide undergraduate and graduate level training, including training of persons with disabilities, in rehabilitation research methods and in subjects related to disability in rural areas;
- Identify or design and test alternative models for delivery of rehabilitation services for residents of rural areas who have disabilities;
- Conduct at least one meeting on the state-of-the-art in rehabilitation in rural areas; and
- Disseminate research findings to vocational and independent living rehabilitation service delivery personnel, researchers, rehabilitation educators, and persons with disabilities.

Community-Based Positive Approaches to the Management of Excess Behaviors

Since 1967, the population of persons with developmental disabilities living in public institutions has been reduced by more than half. Today about 135,000 children and adults are now living in more normalized, community-based

environments, and evidence suggests that this trend will continue.

Recent studies of all State institutions indicate that 46 percent of the residents engage in patterns of serious and challenging excess behaviors that may result in self-injury, injury to others, damage to the physical environment, interference with the acquisition of new skills, and social isolation. Excess behaviors frequently are barriers to community placements, as well as a leading cause of both first-time admissions and readmissions to State institutions. Many community-based programs are now challenged to meet the needs of persons with excess behavior patterns. Studies of various types of smaller community residences indicate that between 10 and 25 percent of residents engage in problematic excess behaviors.

In 1990, NIDRR supported a state-of-the-art conference on positive approaches to the management of excess behaviors. The purposes of the conference were to assess how well current practices meet the needs of persons with excess behaviors and to identify the existing knowledge and training gaps. Conference participants recommended that NIDRR consider issues of intervention techniques, etiology and prevention, training, and family involvement as areas of need.

The field is developing the capacity to analyze functionally the variables that influence excess behaviors. In-depth studies, new classification systems, and valid data are essential for designing effective, positive interventions that can be readily applied in a variety of natural settings. Additional information is needed to identify which intervention and reinforcers work best with different individuals, and which new relevant behaviors should be taught to replace the problem behaviors. New interventions must take into consideration the effects that biological and pharmacological interactions, communication disorders, the environment, the presence of other persons, emotions, motivation, and personal preferences have on the incidence of excess behaviors and the development, maintenance, and generalization of new, socially acceptable behaviors.

There is little information about the social acceptability of nonaversive methodologies and interventions or the cost effectiveness, ease of application, and practicality of these interventions. A center funded in response to this priority will have the task of evaluating the social acceptability and utility of interventions that will reduce excess behaviors and at the same time contribute to greater community integration and inclusion.

Further information is needed about the etiology and prevention of excess behaviors. The recent enactment of legislation that mandates educational services for very young children with disabilities provides an incentive to design effective strategies to prevent the development of excess behaviors. Most research to date has focused on interventions after the problem behaviors have become ingrained and are putting strains on the service delivery system. There is a significant need to study the developmental, biomedical, and environmental variables that may predict or help explain the development, emergence, and maintenance of patterns of excess behaviors.

A major national issue is the discrepancy between what is believed to be effective practice and what is available in most communities. Current data indicate that there may be a reluctance to serve more persons with excess behaviors in integrated, community settings because of the lack of personnel who are adequately trained in nonaversive intervention approaches. Adults are often excluded from integrated or supported employment opportunities. There is a significant need, therefore, to provide training and information to develop a national cadre of service providers who are skilled in addressing a variety of patterns of excess behaviors with positive intervention strategies.

Interdisciplinary, comprehensive curricula, textbooks, and other training materials relevant to nonaversive behavior interventions are needed. Nonaversive interventions are those that do not cause tissue damage, physical pain, stigmatization, or humiliation to the person who exhibits the problem behavior. Nonaversive interventions are also those that the general community would find to be acceptable if applied to members of the population without disabilities. Several communities have exemplary nonaversive programs in place. However, there is no systematic practice of disseminating information about the programs or for providing technical assistance for replication.

In addition, families lack information about the range of nonaversive intervention options that may be implemented at home. They also want information regarding the evaluation of effective interventions, names and locations of skilled professionals and exemplary programs, and access to groups that provide parent-to-parent support. The proposed Center must test and disseminate strategies to help the community level practitioner and families address the varied needs of persons with excess behaviors.

NIDRR plans to support an RRTC that will conduct comprehensive research, training, and dissemination activities on positive approaches to the management of excess behaviors. The planned center is to develop and evaluate nonaversive strategies and interventions to address serious, excess behaviors that occur in a variety of integrated settings.

Any RRTC to be supported in response to this priority statement must provide for an advisory committee that is national in scope and includes significant representation of persons with developmental disabilities, family members, scientists, educators, service providers, health care providers, and others with relevant expertise. Family members and representatives of individuals who exhibit problem behaviors and practitioners who work with them must be involved in all aspects of planning, implementation, and evaluation of the Center's activities. Because of the potential impact of this research on clients of the State-Federal vocational rehabilitation (VR) system, any project to be funded in response to this priority must inform and coordinate, as appropriate, with the relevant VR agencies.

An absolute priority is announced for a Center to:

- Document the role that variables such as behavior states, drug therapies, communication disorders, biomedical conditions, motivation, choices and preferences, time of the provoking stimulus, and the physical environment have in the reduction of excess behaviors and the development, maintenance, and generalization of new behaviors;
- Develop methods for determining which new behaviors should be taught to replace the excess behaviors;
- Design and evaluate multi-component interventions that result in improved functioning in a range of natural settings, identify which intervention approaches are most effective in specific situations, investigate the interactive and individual effects of the interventions, and document the cost effectiveness, ease of application, fidelity, and practicality of the positive interventions;
- Identify, document, and disseminate model community-based practices;
- Investigate the etiology of patterns of excess behaviors, and assess the developmental, physiological, and environmental indicators that emerge during preschool years that may be

related to both problem as well as positive social behaviors;

• Develop and test techniques to prevent the development of patterns of excess behavior;

• Develop and implement multidisciplinary preservice and inservice training strategies, curricula, and other nontraditional materials that focus on a wide range of constituency groups and include common elements such as supervised practical experience in implementing intervention and assessment techniques, a trainer-of-trainers model, and training materials and methods that reach out to professionals and consumers who are members of minority populations;

• Develop and evaluate activities to enhance families' abilities to carry out home programs, evaluate and monitor interventions on the basis of effectiveness, practicality, and appropriateness relative to positive practices, serve as systems change agents, and serve as supports and trainers for other families, developing the materials in formats that can be easily accessed and implemented by families;

• Provide training in research methods and subjects on undergraduate and graduate levels;

• Disseminate information on positive approaches to the management of excess behaviors and training materials for families and service providers; and

• Conduct at least three national meetings that address research needs and disseminate state-of-the-art research and training to families, researchers, community service providers, health care providers, educators, policymakers, and persons with developmental disabilities as planners of, participants in, and presenters at the conferences.

Substance Abuse and Disability

The purpose of this funding priority is to establish a research and training center to focus exclusively on the major rehabilitation problem of substance abuse among persons with other disabilities, e.g., spinal cord injury, traumatic brain injury, developmental disabilities, or chronic mental illness. Although there are no definitive data on the prevalence of drug abuse in populations with other disabilities, many studies indicate that the problem is significant.

Substance abuse problems may affect persons with disabilities at different times in their lives. It may be the cause of disability; for example, head injury as a result of drinking and driving (Gale, Dikmen, Wyler, Temkin & McClean, 1983). Substance abuse may adversely affect the rehabilitation process by causing behavioral alterations or by impairing cognitive processes since rehabilitation is largely a task of adaptation and learning. Substance abuse may affect rehabilitation outcome due to medical complications developing directly from the use of substances, for example, by decreasing motor performance in an individual learning new motor skills. Finally, substance abuse may disrupt vocational rehabilitation and thereby reverse the effectiveness of the personal, professional staff, and financial investments in rehabilitation. Several studies have documented a relationship between the onset of spinal cord injury, head injury, and substance use. Others have indicated that there is a substantial relationship between substance abuse and chronic mental illness, cognitive disabilities, sensory disabilities, and disabilities characterized by chronic pain. While little is known about the characteristics associated with substance abuse in persons with disabilities, researchers have found that self-esteem, mood, premorbid personality, and self-destructive behavior appear to be important variables.

Rehabilitation outcomes may be influenced profoundly by substance abuse. Unrecognized and untreated substance dependence is likely to interfere with the intensive physical, vocational and psychological adjustment required following a disability and injury. Reliable predictors of future chemical dependence problems among persons with disabilities will be essential for improving patient care and rehabilitation planning. Sweeney and Foote (1982) suggest that the problems of addiction and disability combine not additively, but exponentially, and thus create a need for a special responsive and innovative approach to intervention.

Rohe and DePompolo (1985) along with Heinemann and his colleagues (Heinemann, Keen, Donohue, & Schnoll, 1988) suggest that rehabilitation professionals have not adequately addressed substance abuse issues related to policy making, prevention, education, treatment, and follow-up. Nevertheless, substance use and abuse and associated adverse consequences apparently have a serious impact on the daily work of rehabilitation professionals.

NIDRR has concluded that an RRTC is an appropriate mechanism to accomplish the following objectives:

(1) Determine the effect of substance abuse on rehabilitation;

(2) Assess the efficacy of current chemical dependence interventions on individuals with various types of disabilities;

(3) Develop and evaluate new and effective substance abuse intervention strategies and treatment techniques for use during rehabilitation;

(4) Analyze the history of substance use among persons who have other disabilities, including the prevalence and frequency of substance use before and after disability onset and types of substances abused;

(5) Assess the personal, medical, and behavioral characteristics that predict substance use and abuse among persons with disabilities;

(6) Develop and implement preservice and inservice training programs for clinicians, rehabilitation personnel, allied health professionals, generic substance abuse agencies, criminal justice agencies, and community support staff in techniques of identification, early intervention and remediation of substance abuse in persons with disabilities; and

(7) Disseminate findings in accessible formats to service providers, researchers, and persons with disabilities and their families.

Any Center to be funded in response to this priority must involve representatives of the target population in the conduct and evaluation of center activities and in the dissemination of findings and products. The Center must also provide training in research methods and rehabilitation research subjects to undergraduates and graduate students, as well as preservice and inservice training to rehabilitation service providers. Because of the potential impact of this research on clients of the State-Federal vocational rehabilitation (VR) system, any project to be funded in response to this priority must inform and coordinate with the relevant VR agencies.

An absolute priority is announced for a Center to:

• Analyze the history of substance use among persons who have disabilities, including the prevalence and frequency of substance use before and after disability onset, and types of substances abused;

• Identify and describe the personal, medical, and behavioral characteristics of persons with disabilities that predict substance use and abuse;

• Assess the effect of substance abuse on rehabilitation outcome, including employment outcomes;

• Evaluate the efficacy of current chemical dependence interventions in

individuals with various types of disabilities;

• Develop and evaluate new and effective substance abuse intervention strategies and treatment techniques for use during rehabilitation, including strategies that address interactions of clients with the criminal justice system;

• Develop and implement preservice and inservice training programs for clinicians, rehabilitation personnel, allied health professionals, and community support staff in techniques of identification, early intervention and remediation of substance abuse in persons with disabilities; and

• Disseminate findings in accessible formats to service providers, researchers, and persons with disabilities and their families.

Knowledge Dissemination and Utilization Program (D&U)

Knowledge Dissemination and Utilization (D&U) projects ensure that rehabilitation knowledge generated from projects and centers funded by NIDRR and others is utilized fully to improve the lives of individuals with disabilities. The authority for this program is contained in section 202 and 204 (a) and (b)(5) of the Rehabilitation Act of 1973, as amended.

Regional Information Exchange

As part of its effort to disseminate new knowledge on improved rehabilitation practices, NIDRR seeks to promote the widespread use of validated exemplary practices in rehabilitation in order to improve the service delivery system for individuals with disabilities. Many of these exemplary programs were developed at the "grassroots" in communities; others emerged as a result of research sponsored by NIDRR or other agencies. NIDRR proposes to address this objective by establishing one or more Regional Information Exchanges in one or more of the following Department of Education Regions which do not yet have RIEs: Region IV, VII, VIII, or X.

A Regional Information Exchange (RIE) is intended to facilitate the adaption of exemplary program models that were developed within the locality or region of the adapting agency. The RIEs must identify and validate exemplary programs within the established priority areas, "market" the model programs to potential adapting agencies, and provide technical assistance in the adoption or adaptation of the model.

Priority areas for RIE diffusion efforts during the period of this priority include:

(1) Model literacy programs for individuals with disabilities;

(2) Interagency collaboration and coordination in programs for transition from school to work;

(3) Parent-professional collaboration in the integration of individuals with disabilities in education, community living, and employment;

(4) Model programs for the provision of rehabilitation services to persons with epilepsy and their parents; and

(5) Model programs for the delivery of rehabilitation engineering services in vocational rehabilitation agencies.

The RIE programs are restricted to the diffusion of carefully validated model programs in two or more of the designated priority areas listed above, and must provide necessary technical assistance to facilitate the successful adoption or adaptation of the exemplary programs. Each RIE will work within its designated region, as defined in the grant application and cooperative agreement, and must demonstrate the appropriateness of the selected region for diffusion of exemplary programs in the specified priority areas. Because of the potential impact of these projects on clients of the State-Federal vocational rehabilitation (VR) system, any project to be funded in response to this priority must inform and coordinate with the relevant VR agencies.

An absolute priority is announced for one or more projects to:

• Develop a process for identifying exemplary programs, including criteria, a methodology for data collection, and evaluation instruments that include measurements related to the identified criteria;

• Solicit nominations of exemplary programs in the priority area or areas from program operators, consumer organizations, and other relevant parties in the region, giving consideration to the inclusion of demonstration projects funded by NIDRR, the Rehabilitation Services Administration, and other Federal agencies;

• Develop and implement a procedure to validate exemplary programs in the region in the specified priority areas, involving individuals with disabilities and technical experts in the validation process, and document the methodology and findings of the validation process;

• Develop and implement strategies to make the wide audience of rehabilitation service providers and special educators aware of the exemplary programs and stimulate their interest in adopting or adapting similar models, with the assistance of the RIE;

• Develop and maintain a cadre of expert consultants in the RIE's priority areas and in the general area of knowledge transfer who can facilitate the adaption of exemplary programs;

• Facilitate the exchange of technical assistance between the exemplary program and the requesting adopter program through onsite demonstrations, training materials, and direct consultation; and

• Maintain appropriate data on the activities of the RIE to support an evaluation of its effectiveness.

Rehabilitation Engineering Centers

Authority for the Rehabilitation Engineering Center (REC) program of NIDRR is contained in section 204(b)(2) of the Rehabilitation Act of 1973, as amended. Under this program, awards are made to public and private organizations, including institutions of higher education, Indian tribes, and tribal organizations to conduct coordinated programs of advanced research of an engineering or technological nature. REC's also work to develop systems for the exchange of technical and engineering information and to improve the distribution of assistive devices and equipment to individuals with disabilities. Each REC must be located in a clinical setting and is encouraged to collaborate with institutions of higher education in the conduct of a program of research, scientific evaluation, and training that advances the state-of-the-art in technology or its application. Each Center is expected to contribute substantially to the solution of rehabilitation problems through developing practical applications for their research and through scientific evaluation to validate the findings of their research and that of other Centers. REC's generally conduct both academic and in-service training to disseminate and encourage the use of new rehabilitation engineering knowledge, and to build capacity for engineering research in the rehabilitation field. Each REC must ensure that all training materials developed by the Center are presented in several formats that will be accessible to individuals with various types of sensory and mobility impairments.

NIDRR will conduct, not later than three years after the establishment of any REC, one or more reviews of the activities and achievements of the Center. Continued funding depends at all times on satisfactory performance and accomplishment in accordance with the provisions of 34 CFR 75.253(a).

Priority for a Rehabilitation Engineering Center, Rehabilitation Technology Services in Vocational Rehabilitation

The Rehabilitation Act of 1973 incorporated a definition of

rehabilitation engineering and a directive to provide rehabilitation engineering services for persons with disabilities under the auspices of State Rehabilitation agencies. "Rehabilitation engineering" is defined in section 7 of the Rehabilitation Act of 1973 as "the systematic application of technologies * * * to meet the needs of * * * individuals with disabilities." The 1986 amendments to the Act modified section 101 to require a description in each State's plan of how rehabilitation engineering services will be provided to assist an increasing number of individuals with disabilities. The 1986 amendments to section 102 provide for the inclusion in the Individual Written Rehabilitation Plan (IWRP) of a statement, "where appropriate, of the specific rehabilitation engineering services to be provided." Section 103—Scope of Vocational Rehabilitation (VR) Services—states that VR services may include, where appropriate, an evaluation by a person skilled in rehabilitation engineering technology. State VR agencies are not required to provide rehabilitation engineering or assistive technology devices to clients, however.

It has been a common practice for most of the State VR agencies to contract with outside rehabilitation agencies or product vendors for rehabilitation engineering services. There are some States that maintain their own engineering and technology staff (e.g., North Carolina, Florida, Arkansas, Alabama, Maryland, Michigan, North Dakota, and California). Some State VR staff contend that direct rather than contracted rehabilitation engineering services are a more efficient, responsive, and productive means of providing rehabilitation engineering services to VR clients. Since independent living services have also been expanded to include rehabilitation engineering services, there is increased demand for consumers, including those with cognitive, developmental, mental, sensory, and physical disabilities, to have access to community-based engineering and assistive technology support.

A NIDRR-funded field initiated research project entitled "Manpower, Education and Quality Assurance Needs in Rehabilitation Technology Service Delivery" will be completed in 1992. This project will estimate staffing levels and training needs in the field of rehabilitation engineering technology service delivery in VR agencies and is expected to stimulate the development of training and quality assurance programs to meet the needs as defined by the study.

With this level of activity within VR agencies and the increased responsiveness on the part of VR to the technology needs of consumers, State VR agencies have implemented different and diverse models for delivering rehabilitation engineering services. It is important to assess the applicability and viability of the various approaches to service delivery. Questions frequently asked by VR counselors, administrators, and consumers include:

(1) How can VR best serve clients with engineering and assistive technology needs?

(1) How can VR counselors and agencies facilitate the integration of technology into the workplace and community?

(3) How can peers, co-workers, and family be utilized to support rehabilitation engineering activities?

(4) How do employment needs change after the introduction of assistive technology?

(5) How do different approaches to providing direct service compare and what are best practices?

(6) Who should be responsible for providing these direct services and what should be the role of the VR counselor in the process?

There is a need for research to examine the delivery of rehabilitation engineering services in vocational rehabilitation agencies and develop, test, and disseminate improved models. Any center to be funded in response to this priority must involve individuals with disabilities and vocational rehabilitation service providers in all phases of the planning, implementation, and evaluation of center activities and in the dissemination of center findings and products.

An absolute priority is announced for a Center to:

- Analyze service delivery practices and models for direct rehabilitation engineering services for VR clients, including costs, effectiveness, staffing, interagency coordination, and the roles of peers, co-workers, and family members;
- Examine the nature and viability of rehabilitation engineering training practices as they apply to the needs of the VR system;
- Evaluate various assessment protocols used in State VR agencies, including issues of personnel patterns, equipment, cost, and functional results;
- Identify innovative and creative models for providing rehabilitation engineering within or under the auspices of VR agencies;
- Examine VR practices for the purchase or direct provision of rehabilitation engineering services, including referral, assessment, purchase of equipment or devices for clients, training, and follow-along;
- Examine the relationship of engineering services and assistive technology acquisition to job readiness, job skills, and success and longevity on the job-site;
- Develop materials, based on research findings, that can be used by VR agencies to improve rehabilitation engineering services for clients;
- Develop materials and provide technical assistance to enhance involvement of consumers, advocates, and family in the delivery of rehabilitation engineering services;
- Provide training to rehabilitation engineers, rehabilitation counselors, VR administrators, allied health professionals, independent living program personnel, client assistance program personnel, consumers, and other relevant audiences, in optimum techniques for the delivery of assistive technology and rehabilitation engineering services in VR systems;
- Demonstrate models to effectively involve employers in the delivery of rehabilitation engineering services; and
- Disseminate project findings to all VR agencies and other rehabilitation facilities.

Authority: 29 U.S.C. 760–762.

(Catalog of Federal Domestic Assistance Nos. 84.133A, 84.133B, 84.133D, and 84.133E, National Institute on Disability and Rehabilitation Research)

Dated: March 5, 1992.

Lamar Alexander,

Secretary of Education.

Appendix

The Secretary received 82 comments in response to the proposed priorities. Most of these comments strongly supported the priorities. Some comments suggested modifications to the priorities and a few others suggested additional priorities. The Secretary has made some modifications to the priorities based on these comments, although there are not significant changes to the priorities. A synopsis of the comments and the Secretary's responses to them follows.

General Comments

Comment: One commenter suggested that all applicants should be required to coordinate in the development of their applications with appropriate State Vocational Rehabilitation (VR) agencies, because of the potential impact that many of these projects will have on VR clients.

Discussion: The Secretary agrees that it is desirable to have close coordination between research projects and relevant service

agencies that provide services to the study target populations and that may be expected to implement research findings. However, it is not feasible to require this coordination in the application development phase, nor is it necessarily applicable to all priorities. The Secretary believes it is more practicable to require coordination by the grant recipients, once they are chosen, on those projects that are most relevant to the VR system. Potential applicants for the Regional Information Exchanges must show evidence with their applications that they have provided copies of the application to each State-Federal vocational rehabilitation agency in the Region for which they are applying. The State Directors have the option of making comments on the applications to the Department.

Changes: A requirement that the grant recipient inform and coordinate with the appropriate State rehabilitation agencies has been added to the third, fourth, sixth, seventh, eighth, tenth, and eleventh through fourteenth priorities.

Comment: Several commenters expressed concern about the absence of priorities dealing exclusively with problems of individuals with mental illness and urged that priorities be set in that area.

Discussion: In fiscal year 1991, the Department undertook to implement research recommendations of the Rehabilitation Services Administration Task Force on Long-Term Mental Illness. Accordingly, several priorities were announced in that area, including case management, peer and self-advocacy, and supported employment exclusively for persons with long-term mental illness. The Secretary is not unmindful of the continuing need for new knowledge in that area, but at the same time has the responsibility of addressing knowledge needs for all categories of disability. The Secretary reminds potential applicants that the National Institute of Mental Health supports research devoted exclusively to problems of mental illness, and that the Department also supports research in this area through its investigator-initiated programs.

Changes: None.

Comment: A few commenters remarked that there were too few priorities on the development of assistive devices or technology.

Discussion: The Secretary agrees that the continued development and distribution of assistive technology is critical to solving problems confronted by individuals with disabilities. However, priorities are developed in response to the identification of problems to be addressed by the development of specific technological systems that are scientifically feasible. The Department supports several Rehabilitation Engineering Centers that focus on these solutions to problems. In addition, the Department supports several discrete projects under the Research and Demonstration, Small Business Innovative Research, Field-Initiated Research, Innovation Grants and Technology-Related Assistance programs that work on the development of specific devices and technologies. The investigator-initiated programs are often more appropriate sources of funding for research into new technologies.

Changes: None.

Comment: One commenter urged that there be priorities for this year in therapeutic recreation.

Discussion: The Department has announced a research priority in therapeutic recreation in the recent past. The Secretary has based these current priorities on issues that arose in public hearings on the long-range plan, outcomes of past or current research, and on findings of state-of-the-art studies sponsored by the Department over the past two years. It is not possible to have a priority devoted to each topic each year. The Secretary reminds interested parties of the potential to submit applications under the investigator-initiated programs.

Changes: None.

Parenting With A Disability

Comment: One organization pointed out that there are many issues common to all parents and that the project should focus on those that are unique to parents with disabilities. The commenter also suggested some additional emphases, such as single parents, working parents, adoption, and fertility issues. Several commenters suggested that parents with severe physical and sensory disabilities be the focus of the project, while several expressed the opinion that individuals with mental retardation should be emphasized, and one recommended that hard-of-hearing parents be included.

Discussion: The Secretary is pleased with the interest in this priority, which is intended to help children whose parents have disabilities begin school ready to learn. Many of the suggestions were good ones, but the Secretary believes it would not be practicable to impose all of these concerns on one project and will consider many of these issues for future priorities. While the Secretary is aware that individuals with mental retardation need help with parenting, the Secretary has also discerned that more work has been done for this population than for those with other types of disabilities. Therefore, while individuals with mental retardation need not be excluded from the scope of the study, the priority makes clear that these individuals cannot be the exclusive or primary focus of the project. Individuals with severe physical and sensory disabilities must also be included.

Changes: The priority has been amended to include the following provisions: "Parents with disabilities are not unique, but they do experience some additional challenges that are different from those confronted by parents who do not have disabilities. For the purposes of this project, a distinction must be made between those issues that are common to all parents and those that are unique to parents who have disabilities." And there is now a requirement that "any project to be funded in response to this priority must consider the needs of parents with severe physical and sensory disabilities and may include parents with other disabilities if appropriate to the research."

Braille Literacy

Comment: One commenter suggested the priority should consider explicitly the needs of individuals who are adventitiously blinded as well as those who are congenitally blind and that both reading and writing in braille be specified. Other comments were that the time required to become literate in braille is referenced to individual learners, and that the phrasing should be changed to reflect this. Another suggestion was that the priority for training teachers include references to preservice and self-study, as these are common approaches to learning to teach braille. Two commenters did not understand the provision for testing hand-held Braille devices.

Discussion: The Secretary agrees that achieving Braille literacy may be considerably different for those who are congenitally as opposed to adventitiously blinded. The Secretary also agrees that literacy includes both reading and writing, and that the learning goal should be "in optimal time." Since preservice and self-study are important approaches to learning to teach Braille, the priority should take them into consideration. Several researchers are developing convenient assistive devices to convert computer screen text to Braille. The Secretary believes that one or more such devices should be tested to determine the efficacy of the device or devices as an adjunct to increasing Braille literacy.

Changes: The priority has been amended and includes acknowledgement of the differences in teaching Braille to those who are adventitously blinded versus those who have congenital blindness; a goal of "optimal time" for acquiring Braille literacy; recognition that both reading and writing are part of literacy; and reference to self-study and preservice study.

Rehabilitation of Visually Impaired Older Persons

Comment: Several commenters stated that many older persons acquire hearing impairments as well as vision impairments and urged that the priority include research on rehabilitation of individuals who are deaf-blind or who have serious hearing impairments as well as vision impairments. Some of these commenters argued that there was a major gap in services to deaf-blind persons, and urged the Department to fill that gap. One commenter asked that the reference to optical aids also include electronic aids.

Discussion: Although the Secretary agrees that the problems confronting the population of older persons with dual sensory impairments are indeed serious and worthy of study, the Secretary does not believe that this research priority should include these groups. The issues, study populations, and rehabilitative approaches will be different and beyond the scope of this one research project. The Secretary agrees that electronic aids may be valuable in the rehabilitation of older adults with vision impairments.

Changes: The words "or electronic" have been inserted between "optical" and "aids" to indicate that the rehabilitative uses of these devices should be considered in the study where appropriate.

Supported Employment for Persons With Severe Physical Disabilities

Comment: One organization commented that this priority may be based on an incorrect assumption that supported employment currently provides substantial services to individuals with the most severe mental retardation, as it was intended to do.

Discussion: The priority evolved directly from testimony that was presented to the Department in public hearings about the need to develop applications of the supported employment model for individuals with severe physical disabilities. The Department has previously announced research priorities to develop and test for applications for populations with mental retardation, long-term mental illness, and severe traumatic brain injury. If in fact the supported employment program is not serving individuals with the most severe mental retardation, then perhaps some future study should evaluate either the appropriations of the model for that population or the manner in which service delivery agencies implement the model. The Secretary believes that this issue requires further preliminary inquiry, but that it does not, in any case, affect the need for supported employment models that have been adapted for individuals with severe physical disabilities.

Changes: None.

Demonstration of Comprehensive Rehabilitation Services Programs for Individuals With Traumatic Brain Injury (TBI)

Comment: Several commenters suggested that the database for these demonstration programs should be maintained by one of the projects; at present the database prescribed by the Secretary is maintained by a Rehabilitation Research and Training Center.

Discussion: The Secretary understands the contentions that maintenance of the database within the model projects could facilitate intrasystem communication, syllabus development, and data entry and interpretation. The Secretary will assess the appropriateness of relocating the management of the database after the new grants have been awarded. However, it would not be appropriate to add the management of the database to the priority, since all grantees will not be required to maintain the joint database and there is no desire to evaluate applications based on their approaches to database management.

Changes: None.

Vocational Education Models for Students With Sensory Disabilities

Comment: One commenter suggested that an important issue in expanding vocational education for students with sensory disabilities is the need for accessible instructional materials and adaptive educational technologies.

Discussion: The Secretary agrees that accessible instructional materials, as well as teachers trained to use them, are important components of vocational education for students with sensory disabilities.

Changes: The priority has been amended to include a requirement to assess the need for accessible instructional materials and devices and to develop and test accessible instructional materials with students and teachers.

Preparing Young Persons With Deafness To Make Optimal Use of Interpreter Services

Comment: One commenter suggested that the project test the efficacy of coupling interpreters with assistive technology interventions such as computer-assisted transcription and notetaking. A second commenter asked that the priority be modified to include youth who are hard-of-hearing and do not use manual interpreters.

Discussion: The Secretary agrees that the project should include the testing of technological devices that can extend the value and efficiency of sign interpreters. However, the Secretary believes that the needs of hard-of-hearing youth (including oral interpreters and sound amplification) are sufficiently different that they should not be examined in the same research project, since to do so would likely confound the design and complicate access to a study population. The Secretary reminds interested parties that the Field-Initiated Program accepts applications in any areas of disability that are of interest to the potential investigator.

Changes: The priority has been amended to include a reference to "investigating the use of technological approaches—such as computer-assisted transcription and notetaking—to enhance the use of interpreters in the classroom."

Rural Rehabilitation Service Delivery

Comment: One commenter recommended that the focus not be limited to semi-skilled and manual labor occupations, since while such jobs are common in rural areas, they are often insecure and without potential for advancement. The commenter further recommended that the project consider providing continuing education as an inducement to individuals to enter the field of rehabilitation research and that the problem of access to services should be added as an issue of independent living in rural areas. The commenter also recommended that the proposed Center address issues concerning voluntary implementation of the provisions of the Americans With Disabilities Act (ADA) in rural areas where employers are too small to be covered by the Act.

Discussion: The point that it may be more productive to examine a broader range of employment options is well-taken. The suggestion that access to services be specifically mentioned as a problem is also reasonable. While voluntary compliance with the spirit of the ADA is a worthwhile goal, the Secretary believes the scope of such an undertaking would dilute resources available for the other tasks of the Center and suggests that the special issues of the ADA in rural areas might best be approached in a separate project. Finally, the Secretary is unconvinced of the appropriateness of continuing education as a means to create a cadre of highly skilled researchers.

Changes: "Access to services" has been added as a specific issue under rural independent living, and the employment task has been broadened to include all occupations appropriate to rural areas.

Substance Abuse and Disability

Comment: Several commenters mentioned that this priority was particularly applicable to specific disability groups, such as those with cognitive impairments or mental retardation and those with long-term mental illness. One commenter stressed the need to prepare generic service providers—in this case, substance abuse treatment and enforcement agencies—to facilitate solutions for individuals with disabilities and also stressed the importance of the criminal justice system in planning the rehabilitation of individuals with disabilities for whom substance abuse is a secondary disability. One commenter remarked that the priority does not address the needs of those for whom substance abuse is the primary disability.

Discussion: The Secretary reminds potential applicants that the priority requires the assessment of problems and development of interventions for individuals with a variety of disabilities; the resulting Center should not focus on only one category of disability. The need to develop models for use by generic service agencies and to pay particular attention to the impact of the criminal justice system on rehabilitation are good points with which the Secretary agrees. The priority was developed based on results of earlier discrete studies about the role of substance abuse as a secondary disability. The Secretary is considering a future research strategy to address rehabilitation problems of persons for whom substance abuse is the disability.

Changes: The priority has been amended to include emphases on the criminal justice system and on improving the interventions of the generic service providers with this population.

Regional Information Exchange (RIE)

Comment: One commenter argued that new Regional Information Exchange projects should not be priorities for this fiscal year, and that new information programs should await the conclusions of the Department's long-range planning process. Several others noted that the priority for disseminating models to facilitate the implementation of the ADA may be either premature or duplicative of some of the Department's other efforts to assist implementation of the ADA. There was also some questioning of the suitability of some of the new priority areas listed for the RIEs, since they are likely to be addressed by only one, or at best, two new RIEs. One commenter thought that adaptation was a more accurate description of the process than adoption. One commenter suggested that the Secretary specify the Department of Education Regions to which this priority might apply.

Discussion: In the development of these priorities, the Department has consulted the long-range plan proceedings and is confident that the RIE program will remain part of the Department's plan. There are currently RIEs in six of the Department of Education Regions, and the Secretary believes it will be useful to extend this program to other regions. "Adaptation" is no doubt a better depiction of the program than "adoption." In the selection of priority areas for the RIEs, the Secretary attempts to meet some of the

overall needs in the field and priorities of the Congress. It has not been an assumption of the program that all or most RIEs must work in the same priority area, since it is logical that needs and opportunities may differ by region. The priority for epilepsy services is one that was stressed by Congress in the Committee Reports accompanying the 1991 appropriation bill, and the priority on literacy programs promotes the goals of AMERICA 2000 for individuals with disabilities. The Secretary agrees, however, that the ADA priority may be duplicative, and the requirement to focus on exit data in transition may be too burdensome. The Department has funded current RIEs in Regions I, II, III, V, VI, and IX. This priority applies to Regions IV, VII, VIII, and X.

Changes: The word "adaptation" has replaced "adoption" wherever relevant. The priority for dissemination of ADA-related programs has been deleted, as has the need to consider use of exit data in the transition priority. The reference to the Regions not yet covered by an RIE is included in the priority.

Rehabilitation Technology Services in Vocational Rehabilitation

Comment: Two commenters objected to the statement that RECs must be located in clinical settings. A third commenter requested that the REC consider the technology needs of individuals with mental retardation as well as those with physical disabilities.

Discussion: The requirement that RECs be located in a clinical setting is stated in the regulations governing the program (34 CFR 353) and was not proposed for public comment at this time. The Secretary has interpreted this provision to mean that the REC must have access either to a client population for the testing of products and devices or to an organizational clientele in the case of those RECs focusing on technology transfer. The reminder that the technology needs of persons with mental retardation must be taken into account, is a meritorious one.

Changes: The priority has been amended to incorporate a specific reference to the technology needs of individuals with retardation.

[FR Doc. 92-8771 Filed 4-16-92; 8:45 am]
BILLING CODE 4000-01-M